



## **Palaeomagnetic and palaeoanthropologic investigations in the Nihewan Basin, China**

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The Nihewan Basin in North China contains late Cenozoic mammal fossils that have been studied for nearly 80 years. At one locality, Majuangou (40°13.517'N, 114°39.844'E), palaeomagnetic and palaeoanthropologic research indicate there was human presence in northeast Asia about 1.7 m.y. ago. On the basis of the palaeomagnetic data, the oldest artifact layer (MJG-III) is assigned the age 1.66 m.y. Normal polarity (interpreted to be the Olduvai Normal Subchron: 1.97-1.77 m.y.) underlies MJG-III by about 10 m. Lower in the section the polarity returns to reverse (Zhu *et al.*, 2004).

In 2005, we collected palaeomagnetic samples from three horizons of silty clay 2.6 m lower in the MJG-III Majuangou section. Treated by thermal demagnetization, the samples record reverse polarity. We also collected palaeomagnetic samples from the Danangou section (40°05.6'N, 114°43.6'E) of the Nihewan Formation near Dongyaozitou. The section is about 100 m thick and has four members divided into 27 units on the basis of lithology; from bottom to top the members are sand-gravel, marl, yellow sand, and sand clay (Cai *et al.*, 2004). Following thermal demagnetization, the lowest two units (units 1 and 2) record reverse polarity, as do other units we have measured so far (units 5, 9, 10, and 15). Previously, normal polarity at the base of the section was reported (Li and Wang, 1991), and mammal remains from units 1 and 2 indicate a late Pliocene age (Cai *et al.*, 2004). The upper member (sand clay: above unit 18) records normal polarity and is assigned to the Brunhes Normal Chron (0.78 m.y. – present).

In 2006, we collected palaeomagnetic samples at about 1-m intervals in the entire 125-m Laowogou section (40°09'N, 114°37'E) near Daodi village and treated the samples by thermal demagnetization. The section contains 29 units, of which the lower 18 record normal polarity; the change to reverse polarity occurs midway in unit 19, approximately 70 m above the base of the section. The magnetostratigraphy for Laowogou is in accord with the results reported by Li and Wang (1991).